DEVELOPMENT OF AN ABSTRACT MODEL TO IMPROVE THE EFFICACY OF E-GOVERNANCE IN RURAL AREAS IN INDIAN PERSPECTIVE

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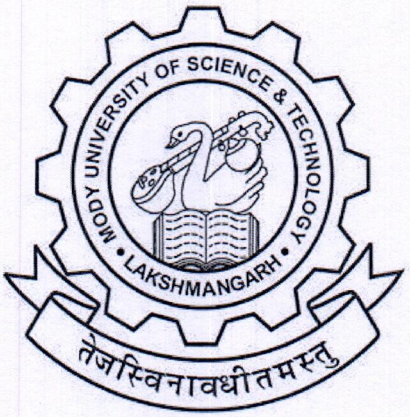

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1. INTRODUCTION

The United States of America is the leading country in divulging assorted e-governance services followed by Taiwan, India, Netherland, South Korea and Malaysia [1]. For adoption of e-governance in India, Australia, Belgium, Denmark, Austria, Japan, Finland, France, Canada, Germany, Korea, Singapore, Jordan, Egypt, UK, New Zealand, USA, Malaysia, Brazil and European Union *"the strategic framework of e-government"* model is being used. It is a generic model which ensures delivery of individual services to the citizens and two way communications at each module [2].

India is the 7th largest country on the basis of its geographical area [3] and 2nd largest country with total population of 1.16 billion. The 72.2% of the total populace lives in rural areas and uses 29 different languages as a media of communication [4]. Moreover, India is the country with largest democracy across the world [5] with the intent of extending participation of people up to grass root level in framing government policies. In such a diversified and perplexing scenario, it was a great challenge for the government that how government can extend their reach up to grass root level in order to identify local demands, necessities and their problems. To accomplish the aforesaid challenge, the government has introduced the conception of decentralized governance through 73rd and 74th constitutional amendment which encompasses devolution of powers and functions up to local level [6, 7]. Although, this initiative was taken in appropriate direction but despite of that intended results were not obtained. The functioning of local self-government will get influenced with some inevitable issues among elected representatives like dearth of awareness about their role and powers, lack of information, capacity building etc. [8]

The technological era in India ascends with the advent of Information and Communication Technology (ICT); as an inescapable tool for communication and dissemination of information; and as a result the idea of e-governance was coined. Hence, around 1990 a new term e-democracy was coined which means inculcation of ICT in existing democratic process for its rejuvenation by enhancing people participation up to local level [9]. E-governance is a fusion of governmental tasks with communication technologies that will bring more accountability and transparency in the system and hence can be treated as an inescapable tool for mitigating corruption [10,11]. This facet of governance is essential for understanding the needs of citizens

more appropriately, boosting up the operational effectiveness and enhancing prompt accessibility of critical data to citizens [12]. Numerous research studies and review of literature across the world affirms that, e-governance is an influential tool for deliberately enticing transparency in the existing democratic system of governance. On contrary to the positive impact of e-governance i.e. transparency, there may be its adverse effects also which can't be underestimated. The chances of information overload, cyber propaganda and inadvertent information release can be considered as major confrontational aspects of more transparent democratic system. Therefore, e-governance should be treated as an approach for identification and eradication of loopholes and glitches in the democratic system [13].

In India the concept of e-governance has its roots in seventies when government has started the development of in-house applications in the areas of defence, economic monitoring, planning, tax administration, elections etcetera [14]. The seamless efforts of government were conceptualized on May 18th, 2006 and government has approved National e-Governance Plan (NeGP) with the objective to *"Make all Government services accessible to the common man in his locality, through common service delivery outlets, and ensure efficiency, transparency, and reliability of such services at affordable costs to realise the basic needs of the common man"* [15]. NeGP encompasses 31 Mission Mode Projects (MMPs) under central, state and integrated categories along with 8 components.

The motive force behind NeGP was to perform an overall development of nation by strengthening democracy through disseminating information at every level of governance; which increases the level of participation of people in governmental tasks. As India is divided into two segments i.e. rural and urban, therefore, the participation of both segments in design, development and execution of policies is essential. As rural segment of India dominates over urban segment in terms of population and relatively more fenced with the problems like illiteracy, poverty, lack of awareness, lack of connectivity (telecommunication, electricity, road) etc. [16] in comparison with urban segment. Therefore it is indispensable to develop rural areas, nevertheless the government has given significant attention towards rural areas and taken *e-panchayats* as a MMP but, a common policy can't be applicable to all diversified areas of society and hence they require keen consideration. The majority of e-governance projects nosedive because of inadequate implementation mechanism, lack of awareness, cost

infectiveness and participation of people. Therefore, existing modus operandi for delivering e-services especially in rural areas needs considerable attention as well as revision in order to accomplish the intended objectives of rural development.

2. LITERATURE REVIEW

The proposed research work stances on three facets *viz* current scenario of e-governance in India, concept of local self-governance from the perspective of rural development and inculcation of ICT and e-governance in rural development as well as in local self-governance. This section encompasses the present state of knowledge about aforesaid facets; therefore it has been further subdivided in to three segments depicted as under:

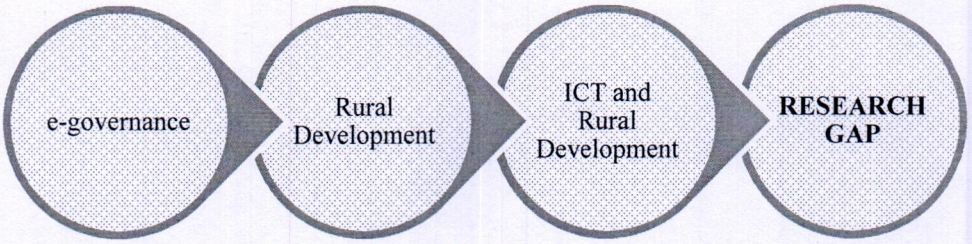

Figure 1: Steps in Review of Literature

Subsequently the research gap will be identified which leads towards establishment of objectives and appropriate research methodology to accomplish them.

2.1. E-GOVERNANCE: THE CURRENT SCENARIO

The U.S. e-government Act, 2002 defines e-government as *"The use by the Government of web-based Internet applications and other information technologies, combined with processes that implement these technologies, to*

a) Enhance the access to and delivery of Government information and services to the public, other agencies, and other Government entities or

b) Bring about improvements in Government operations that may include effectiveness, efficiency, service quality, or transformation;"

Whereas according to the European Union *"e-Government is the use of Information and Communication Technologies in public administrations combined with organisational change and new skills in order to improve public services and democratic processes" (Grönlund, 2004)* [17]. Further, *(Felix, Kumar, & Vijaykumar, 2011), (Dawes, 2008)* & *(Safeena & Kammani, 2013)* [18, 19, 20] defined e-governance as a tool for leveraging the potential of ICT for improving effectiveness of government activities, strengthening democratic process which led to more empowered citizens and more transparent government offices. In the current era, e-government has transformed from being *"just another office tool"* to a powerful utility for innovation, change and a tool for rejuvenating public sector *(OECD, 2009)* [21]. The authors *(Bannister & Connoiiy, Defining E-Governance, 2012)* [22] pertinently mentioned that e-governance and e-government are being used as a synonym in Indian perspective. Finally the authors defined e-governance as use of ICT in government in ways that either alters governance structures or processes in ways that are not feasible without ICT and/or create new governance structures or processes that were heretofore not possible without ICT and/or reify heretofore theoretical ideas or issues in normative governance. The normative governance means ideology of governance which encompasses transparency, accountability, integrity, honesty, impartiality, efficiency etc. in terms of possessing, delivering and enabling services. It is defined by *(Prabhu C. , 2012)* as a form of e-business in governance, which encompasses the processes and structures tangled in delivery of electronic services to the public [23].

Further, *(Satyanarayana, 2004)* [24] defined that, e-government is the modernization of processes and functions of the government by inculcating ICT tools whereas citizens are treated as passive recipients of digital information and services. Nevertheless, e-governance is a decisional process which involves ICT in governance with the objective of wider participation and deeper involvement of citizens, institution, NGOs and other companies. Moreover, the author has also manifested about e-government architecture of USA, UK, and Singapore etc. and various e-governance models like JV model; BOO model, BOOT model and ASP model for providing G2G, G2B and G2C services. It also discusses various technological aspects for the

implementation of e-governance and case studies of various on-going e-governance projects. The *(Kalam, 2008)* [25] has visualized e-governance as "A transparent smart e-Governance with seamless access, secure and authentic flow of information crossing the interdepartmental barrier and providing a fair and unbiased service to the citizen."

So far various definitions of e-government have been discussed from diversified perspectives. For accessing the level of effectiveness of e-government in any nation the concept of e-government readiness index was coined. According to United Nations e-government survey framework *(Affairs U. D., 2012)* [26], e-government readiness index indicates capability and the inclination of the public sector towards deployment of ICT for improving knowledge and information in the service of the citizen. The capability embraces: fiscal, infrastructural, social capital, regulatory, bureaucratic and systemic capacity of the state. The inclination indicates towards testament of the government's commitments in providing information and knowledge for the empowerment of the citizen. The survey compares the e-governance readiness index calculated in year 2010 and 2012 and perceived an average growth of 13.26% in e-government readiness index among Asian countries. There is a growth of only 6.23% among Southern Asian countries. But, surprisingly the downfall in e-government readiness will be observed among all Southern Asian countries except Iran. In 2010, India has secured 119th rank among 193 countries whereas it was noticed 125th in year 2012 therefore India rolled down by 6 positions.

Table 1: E-Government Index for Southern Asian Countries

Country	E-Government Index 2012	Rank 2012	Rank 2010	Rank Change
Maldives	0.4994	95	92	**-3**
Iran	0.4876	100	102	**+2**
Sri Lanka	0.4357	115	111	**-4**
India	0.3829	125	119	**-6**
Bangladesh	0.2991	150	134	**-16**
Bhutan	0.2942	152	152	
Pakistan	0.2823	156	146	**-10**
Nepal	0.2664	164	153	**-11**
Afghanistan	0.1701	184	168	**-16**

Source: United Nations E-Government Database

The table 1 describes the status of e-government in India from international perspective.

Australia is one of the pioneer in successful implementation of e-governance *(Bilbao-Osorio, Dutta, & Lanvin, 2013)* [27] and it espoused a five phase model of evolution of e-governance. The first phase *(emerging)* delivers only static government information on the website. The second phase *(enhanced)* delivers information about legislation, policies and related reports; the third phase *(interactive)* facilitates the people with interactive government websites along with services integration. In the fourth phase *(transactional)* various G2C services like tax collection, bill payment etc. were offered 24 hours. And the fifth phase *(connected)* undergoes horizontal and vertical integration which acts as a bridge between public, industries, institutions and government *(Chou & Lin, 2012)* [28].

The report *(Commission S. A., Promoting e-Governance: The Smart Way Forward , 2008)* [29] has described about seamless initiatives taken by Government of India to accomplish the deployment of e-governance in India. According to this report in 1970, the Government of India (GoI) has established Department of Electronics and subsequently in 1977 GoI has taken first major step towards implementation of e-governance by establishment of National Informatics Centre (NIC). By 1980 most of the government offices were equipped with computers but their role was confined up to word processing. With the span of time and advent of ICT, the GoI has taken a remarkable step for fostering e-governance by launching the National Satellite Based Network NICNET in 1987 followed by District Information System of the National Informatics Centre (DISNIC) and according to *(Prabhu C. , 2012)* [30] NICNET was the first government informatics network across the world equipped with facilities like TELNET, FTP, Internet along with database services (GISTNIC and MEDLARS). Up to 1990, NICNET has extended its extent from state headquarters to district headquarters. The GoI has established Ministry of Information Technology in year 2000, and identified minimum 12-points agenda for e-governance. This agenda comprises of providing computers with software to officers, necessary training to

officials, adoption of office procedure automation software (developed by NIC) and inclination towards automation of various mundane operations. Finally in year 2006, the GoI has launched National e-Governance Plan (NeGP) and categorizes the initiatives in to three broad categories *viz* G2C (Government to Citizen), G2B (Government to Businesses) and G2G (Government to Government). The report also portrays a brief report about various G2C initiatives like *Bhoomi* project in Karnataka, *Gyandoot* in Madhya Pradesh, *Lokvani* in Uttar Pradesh, *FRIENDS* in Kerla, *e-Mitra* in Rajasthan, e-Seva in Andhra Pradesh, *RACE* in Bihar, G2B initiatives like *e-Procurement* in Andhra Pradesh & Gujarat, *MCA21* and various G2G initiatives like *Khajane* project in Karnataka, *SmartGov* in Andhra Pradesh. It also indicates some key factors responsible for success and failure of any e-governance projects.

The *(Chauhan, 2009) (Technology D. o., National e-Governance Plan, 2014) (Times, 2007)* has described NeGP, along with its vision, components, implementation strategies and architecture of the plan. Further, it also gives an overview of India from geographical, political, economic, social, and legal perspective moreover; it also discusses the IT aspect of India in context of implementing NeGP. It states that NeGP comprises of 27 mission mode projects and components with the objective of computerization and automation of essential mundane tasks with an estimated outlay of INR 3,300 crore. In year 2011, four new MMPs related to health, PDS, education and post were also added therefore, currently NeGP encompasses 31 MMPs. The SWAN (State Wide Area Network), SDC (State Data Centre) and CSC (Common Service Centre) were also identified as the major components for delivering numerous e-services [31,32,33].

Further, *(Bhattacharya, 2012)* [34] has described the concept of *e-Gov 2.0* as an evolutionary step to attain a more efficient, inclusive and participative government by adopting new methodologies in business, operational, financial and technology. Moreover it also suggests various models for e-Gov 2.0. The book also focuses on the inevitability of Public Private Partnership (PPP) in e-government along with their current scenario and suggests some regulations on PPP to ensure their

sustainability. It also discusses IT policies of various developed and developing countries like China, Japan, Brazil, USA, Europe, Germany, Belgium, Malaysia, Indonesia, Chile and India and affirms that the current IT policies adopted by developing countries appears to provide excessive economic benefit to few agencies in the developed countries as they have set their own technological proprietary standards. It also depicts the architecture of existing Government Data Centres (GDCs) and attempts to reengineer them by incorporating virtualization and consolidation techniques to enhance scalability, availability and cost minimization. The author also emphasized on cost effective delivery of e-services to the citizens by fostering the culture of utility based computing and adoption of open standards in e-governance. Moreover, it also portrays the existing structure of telecentres and call centres and proposes their reengineered architecture in order to enhance their utility. According to *(Chuna, Shulmanb, Sandovalc, & Hovyd, 2010) (Meijer, Bannister, & Thaens, 2012)* [35,36] the key intention behind e-Gov 2.0 is to augment the extent of communication and participation among government and citizens. It undergoes the use of social media which encompasses blogs, wikis, social networking sites, mashups, RSS, virtual world etc.

The government is expanding an enormous amount on cultivating the culture of e-governance through NeGP, but despite of that results are not overwhelming. Although there are islands of success in the area of e-governance, but still there are certain areas which are unexplored or inadequately explored. On the basis of the survey; 85% failure rate for e-governance projects has been noticed across the world, whereas in year 2009 alone, the worldwide expenditure on the technology abided by the government was 428.38 billion US dollars *(Luna-Reyesa, Melloulib, & Bertotc, 2013)* [37]. The authors *(Mistry H. , 2010) (Dwivedi & Bharti, 2010) (Gajendra, Xi, & Wang, 2012) (Kumar, Umashankar, Rani, & Ramana, 2010)* have identified major impediments and challenges in successful implementation of e-governance in India. According to them inadequate planning, leadership failures, deficiency in finances, lack of motivation and awareness, dearth of citizen centric

nature of applications, poor cooperation among bureaucrats and people at local level, lack of trust, miserable technical design which endures lack of interoperability among distinct e-governance applications and underutilization of ICT infrastructure resources are the major obstacles in successful implementation of e-governance in India [38,39,40,41]. Although at international level various novel technologies are being used for facilitating e-governance such as semantic web *(Germany)*, virtual reality *(Sweden)*, voice recognition *(Florida)*, Twitter *(USA)*, cloud computing *(UK)* etc. but interoperability in e-governance applications is the prime vision across the world *(Bannister & Connolly, Forward to the past: Lessons for the future of e-government from the story so far, 2012)* [42]. It is aptly emphasized by *(Rajagoplan & Sarkar, 2008) (Guma, 2013)* (Odat, 2012) that community centric e-governance applications need to developed after identification of local needs, conditions and demands [43,44,45]. The authors *(Bhatnagar & Singh, 2010)* [46] delineated about parameters for analysing impact of e-governance services and states that quality of service delivered by e-governance and cost abided by the citizen for availing e-services are the major factors responsible for sustainability of any e-governance programme. They also advised that a survey must be conducted for analysing degree of relevance in order to mitigate the occurrence of failure. The impact assessment analysis for every e-governance project has also been recommended and they suggested about incorporation of impact assessment and evaluation module within the application. Furthermore, *(Savoldelli, Misuraca, & Codagnone, 2013)* [47] have also accentuated on impact assessment of e-services and suggested a model for the measurement of e-government and *(Stanimirovic & Vintar, 2013)* [48] also suggested an indicator model for evaluation of transformation effects, infrastructure investments, political and sociological effect, economic and sustainability impacts with reference to e-governance.

Furthermore, *(Asadi & Rashidi, 2012)* [49] firmly advocated the use of Service Oriented Architecture (SOA) in e-governance for data management, consolidation of numerous offered services, plummeting the cost of IT infrastructure by integrating services, enhancing reusability and facilitating interoperability among

various e-governance applications. The authors *(Das & Patra, 2013)* [50] have identified challenges in designing e-governance applications and mentioned as: ability to handle heterogeneity of applications, ability to achieve interoperability to accomplish seamless exchange of data, skill to handle scalability so that new applications can be used as an addendum in the existing systems and can handle growing number of users and ability to attain high level of data abstraction to maintain privacy of data. To eradicate these problems the authors have suggested the use of SOA in designing e-governance applications. As interoperability is directly proportional to reusability of the e-governance applications *(Tebib & Boufaida, 2013)* [51] therefore, it also requires proper attention. And the authors have proposed a framework for enhancing interoperability among e-governance applications. Further, the author *(Rao, 2013)* [52] proposed a hybrid framework for e-governance in India which encompasses centralized approach for document management, knowledge management, file management, grievance management etc. and decentralized approach for land registration, building plans, vehicle registration, criminal and crime information etcetera.

The Cloud computing is also becoming a big force to enhance delivery of services related to e-governance *(Kumar N. V., 2011) (Misuraca, Alfano, & Viscusi, 2011)* [53,54]. The cloud computing is not only a tool for cost reduction but also it helps in; enabling new services, improving education system and creating new jobs/ opportunities *(Forum & Accenture, 2010)* [55]. The studies *(Radhakrishnan, Kamal, & Joshi, 2012) (Hada, Singh, & Goyal, 2012)* [56,57] also affirms the usage of cloud for e-governance applications to exaggerate the availability of information, diminish the cost of ICT infrastructure and enhancing interoperability between applications. Moreover, it also illustrates various challenges in adoption of cloud computing for e-governance in India. The issues raised by the authors are transparency, security, performance, availability, scalability and disaster recovery. The government of Japan has established "Kasumigaseki Cloud" to deliver public services to its citizens and

according to government of Singapore; it is a major source of economic development *(Bansal, Sharma, & Satish, 2012)* [58].

2.2. CONCEPT OF LOCAL SELF-GOVERNANCE AND RURAL DEVELOPMENT

According to the report *(Affairs M. o., 2011)* [59] when planning process was launched in 1951, at that time population of India was 361088090, out of that 298644381 people were residing in villages. Further, *(Datt, 1998) (Mishra & Puri, 2003)* [60,61] have revealed that 47.37% of rural people were below poverty line and top 10% of population had received about 35% of the income. The author *(Alagh, 2006)* [62] has indicated that without local level participation it was economically difficult to bridge such a vast income gap and it became a daunting task for the policy makers also to include this downtrodden segment of rural vicinity in the main-stream of life. Consequently, in 1952 Community Development Programme was started to encompass the rural people in economic development. Article 40 of Indian Constitution had already directed the state to organize the Gram Panchayat at village level and provide it necessary powers and functions which are essential for it to establish as a unit of self-government. Later on, Balwantrai Mehta Committee (1957) in its final report also advocated the significance of three-tier structure for the implementation of various programmes and schemes at village level. This three-tier structure was named as 'Panchayati Raj'. However, recommendations of Balwantrai Mehta Committee were not followed by all the states seriously. In the mid-term appraisal of seventh five year plan, it was accentuated to make the rural development programmes compatible with Panchayati Raj Institutions (PRIs) in the following words: "It is noticed that wherever the Panchayati Raj institutions have been actively involved, the implementation of rural development programmes has been better and the selection of beneficiaries and designing of schemes have been more satisfactory. The planning Commission has been impressing upon the states that various rural development programmes will be more realistic and meaningful if people's representatives are actively involved and associated in local level planning, design formulation and implementation of those

programmes and selection of those beneficiaries in the anti-poverty and employment programmes such as IRDP, NREP, RLEGP, etc. and there is no better instrument to meet this need other than Panchayati Raj institutions."

Therefore, 73rd Constitutional Amendment Act was embraced to provide everlasting status to these institutions of local participations. It was projected that the new local self-government system would be able to transport the necessary support to the rural development programmes. The Act directs the states to give necessary powers to Panchayats for the implementation of rural development programmes. The prerequisite for the success of these rural development programmes is to have an active involvement of Panchayati Raj Institutions. The state governments are stipulated to provide the basic infrastructure and bureaucracy at all three levels and the Ministry of Rural Development will also actively contribute and cooperate in this regard *(Development, 2013)* [63].

The authors *(Mishra, Akhtar, & Tarika, 2011)* [64] have advocated that there must be keen involvement of PRIs in accomplishing the envisioned objectives of rural development. According to the authors most of the funds sanctioned and granted by the government for rural development remains unutilized because of inadequate modus operandi and poor awareness level among rural masses. Therefore they need to be sensitized and appropriate implementation approach like PPP should be adopted.

2.3. ICT AND RURAL DEVELOPMENT

Only establishment of an information technology (IT) infrastructure in the rural area doesn't leads towards better delivery of e-services. It requires fostering a culture of enactment across various ministries and departments at the Centre, State and District levels *(Bagga, Vashista, Sekhar, & Gupta, 2009)* [65]. The e-governance initiatives in the rural areas should be taken by identifying and analysing the grass root realities *(Malhotra, Chariar, & Das, 2011)* [66]. The authors *(Bernnat, Johnstone-Burt, Zink, & Thomé, 2010) (Cloet, 2012)* [67,68] illustrates that, the strategy devised for the implementation of e-governance should be comprehensive; an approach should be citizen centric and should follow multiple channels of communication for dissemination of e-services. Furthermore, according to *(Dwivedi & Bharti, 2010)* [69]: the lack of necessary infrastructure, lack of awareness regarding e-services, inequality in gaining access to various services between

urban and rural areas, technical illiteracy and language dominance were found as the major problems in successful implementation of e-governance. The report *(Initiative, 2013)* [70] has revealed that, disparity in rural-urban infrastructure also encumbers private investments in rural areas.

The Punjab government imparts various e-governance services in rural areas but they are not effectively implemented *(Singla & Aggarwal, 2012)* [71]. The e-Jana Sampark project which is functional in Chandigarh is intended to facilitate the underprivileged citizens having lack of IT and internet facility. It provides various e-governance services and minimizes the interaction points without any wastage of time *(Grievances D. o., E-Jana Sampark, Chandigarh-IT, 2012)* [72]. The Warana Kiosks project was intended to serve the villagers but led to failure because of lack of participation by bureaucrats and the top down approach *(Cecchini & Raina, 2008)* [73]. The authors *(Singhal & Prasad, 2012)* [74] have delineated that, *e-Mitra* project in Rajasthan has attained the significant success as 96.4% people are aware of it and 80% of the people have utilized various services offered under it. The PPP model has been adopted by government of Rajasthan for delivering numerous G2C services through *e-Mitra* via IT *Kiosks* or Common Service Centres (CSCs). The CSC project is envisioned to escalate the utilization of e-services in far-flung areas implemented on the basis of either NIC model or PPP model. However, the government has almost accomplished the intended target of enrolling 1,00,000 CSC by enrolling 97,439 CSC, but success of the project is bottlenecked with some factors like shortage of electricity in villages, non-availability of internet connection, lack of training among functionaries and bureaucrats, lack of information and awareness about ICT usage among rural people, lack of local language support in e-service's interface, and administrative delay *(Datta & Saxetia, 2013)* [75]. The model suggested by *(Nabafu & Maiga, 2012)* [76] for efficacious implementation of e-governance at local level also emphasis on capacity building of functionaries and sensitization of citizens about e-services. By adopting the appropriate steps towards propagating awareness about Ashwini project,t the Byrraju Foundation is imparting urban services in rural areas as a result; currently there are 32 centers and 116 villages covered by the project in East & West Godavari districts *(Grievances D. o., 2012)* [77]. The Akashya project in Kerala facilitates citizens to make online payment towards government through single ICT window *(Grievances D. o., Akshaya: Innovative Operations and Service Delivery, Kerala, 2011)* [78]. The use of Voice over Internet Protocol (VoIP) can also reduce the cost as well as

provides better telecommunication and can be more effective in establishing communication in remote areas *(Manikpuri & Choudhary, 2012)* [79]. According to IDC, the smart phone market in India has grown up from 11 million units in year 2011 to 16.3 million in year 2012 with a remarkable growth rate of 48% *(Corporation, 2013)* [80].The authors *(Garg & Sundar, 2013)* [81] have suggested a mobile based smart Public Distribution System (PDS) for India to eradicate anomalies in existing PDS for improving service delivery mechanism and accomplishment of more transparency in the system. Inadequate IT infrastructure is one of the prominent impediment in implementation of e-governance in rural areas and assimilation of cloud computing can eradicate this problem up to great extent *(Khare, Raghav, & Sharma, 2012)* [82].

The presented review of literature reveals that there is a strong need to ponder and reengineer the current mechanism for adopted for deployment of e-governance and its services especially in rural areas. Therefore, a novel, reengineered prototype has been proposed to improve the efficacy of e-governance in rural areas.

3. THE RESEARCH GAP

Aforesaid review of literature was an attempt to impart information on e-governance and rural development immensely. Moreover, it has described the silhouette of ICT in rural development. Nevertheless, it has also discussed and pointed out various shortcomings and hurdles in successful and effective deployment of e-governance, especially in rural areas. On the basis of literature review and survey conducted among PRIs and functionaries, the following problems in the existing scenario were identified:

- Lack of planning and information about grass root realities while designing e-governance applications which leads to the development of non-citizen centric e-governance applications
- The awareness level of the people about e-governance and its related services in rural areas is not up to mark
- The level of participation among members of PRIs, beneficiaries or villagers and bureaucrats about implementation and utilization of e-services at local level is not satisfactory
- The level of awareness of bureaucrats about various e-services to be delivered or offered in local vicinity is also low

- The e-services delivered in the rural areas are not cost effective
- Availing e-services especially in rural remote areas is much time consuming due to lack of IT kiosks
- Rural connectivity in terms of roads, electricity, telephone line, internet etc. is also a mammoth challenge
- The sustainability of IT kiosks or CSCs in rural areas is also low as majority of CSC are being implemented on the basis of PPP and depends on the revenue generated from local vicinity
- The cost incurred in establishment of new IT infrastructure is very high which includes IT hardware, software, real estate, power backup and air conditioning
- The accessibility of e-services in remote areas is quite low
- Lack of local language support in application, awareness campaigns and call centres
- Majority of e-governance applications are autonomous and suffering with lack of interoperability which causes redundancy, inconsistency and non-availability of whole information
- The political will was also found responsible of unsuccessful implementation of e-governance in very few cases
- Illiteracy and poverty are determined as one of the formidable challenges in effective implementation of e-governance in rural areas

4. OBJECTIVE OF THE STUDY

There is an abundant appetite for improving process of e-governance in rural areas of India, but a single study is not sufficient to cover all the aspects. Therefore, prime objectives for the study are defined as under:

- To analyse the current level of awareness about ICT and services among PRIs in rural areas
- Development of a cost effective abstract framework to improve service delivery mechanism in e-governance
- A conceptual framework for improving efficiency of e-governance in rural areas
- Conceptualization of a framework to improve the utilization of e-services in rural areas

5. RESEARCH METHODOLOGY

The research methodology is a scientific as well as systematic approach adopted to conquer the objectives of the study. There are various types of research like descriptive research, exploratory research, experimental research, longitudinal research etcetera. This research comes in the category of exploratory research. The methodology adopted to accomplish the objectives of this research is described as under:

The review of literature encompasses study of potential research works as well as books written by eminent persona in thrust area. It also reveals that, the rural society in India is surrounded with numerous problems which are already mentioned in the research gap section 4. But, most of the researchers have utilized and relied only upon secondary data for their study without undergoing any field visit in order to identify grass root realities. Although, this statement is controversial but the intent behind this statement is not to put the stigma on existing researches and it raises the level of inquisitiveness of the researcher about identification of problems and needs at local level.

Therefore, an interview schedule was designed on the basis of problems identified by literature review. Thereafter, a survey was conducted for selected PRIs and associated bureaucrats of two states *viz* Rajasthan and Haryana. Further, the PRIs in the both the states were chosen systematically i.e. two PRIs from each state on the basis of their literacy rate. As it is evident from various studies that literacy rate is directly proportional to the level of awareness therefore out of two, one PRI with low literacy rate and another with high literacy rate were chosen for both the states.

On the basis of review of literature, primary data collected through survey, suggestions given by various stakeholders during survey and suggestions given by various experts of the domain, the prototypes were designed to triumph the intended objectives of e-governance in rural areas.

6. TAXONOMY OF THE THESIS

The present study is divided into four chapters which are further subdivided into various sections. The *first chapter* undergoes rigorous review of literature based on scenario of e-governance at national and international level, inevitability of local self-governance, rural development. Further, it also encompasses the review of existing e-

service delivery mechanisms and major impediments. It also envisages the research gap and objectives of the study. To accomplish the objectives of the study and bridging the research gap, an appropriate research methodology is also defined.

The *second chapter* spot some light on current status of e-governance in India along with a brief description of some landmark projects. It depicts the journey of the concept of local self-governance from antediluvian time to 21st century in India. Moreover, it also portrays the significance of ICT in local self-governance and rural development. Further, it also encompasses the results of the survey conducted for analysing the grass root realities about adoption of e-services in rural areas among its various stakeholders. Nevertheless, it also comprises the suggestions given by PRIs and bureaucrats for enhancing effectiveness of e-services in their vicinity.

The *Third* chapter comprises of abstract frameworks for reducing the cost incurred in establishment of ICT infrastructure and improving delivery of various e-services through e-governance. Further, it also consists of frameworks for enhancing the utilization of e-services in rural areas by increasing accessibility, availability, interest about delivered services and capacity building of bureaucrats, elected representatives and beneficiaries. It also encompasses utility analysis of frameworks with the primary data.

Finally, chapter *four* contains major findings, suggestions and conclusion. It also suggests a concept based upon Australian model of e-governance to eradicate some severe problems in currently adopted Indian e-governance policy for design and development of e-governance applications.

--- THE END ---

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